WHAT IS CLAIMED IS

1. An apparatus for imposing or measuring a position or a force with at least four degrees of freedom, comprising a fixed base, a movable platform, articulated links connecting the movable platform in parallel to the base, and measuring means, said articulated links comprising at least four articulated kinematic units, each of which is mounted on the base and connected to a point of connection of the platform to move in conjunction with a movement of said point in a direction of translation corresponding to one of principal axes (X, Y, Z) of a spatial reference system, at least one pair of said kinematic units being connected to two of said points of connection spaced from one another and being arranged to move in conjunction with translations thereof in a same direction and thus in conjunction with a rotation of the platform when the amplitudes of the translations at said two points of connection are unequal,

wherein each of the articulated kinematic units comprises a parallelogram which is elastically deformable in its own plane, an articulated transmission device connecting the parallelogram to the platform, and a linear displacement sensor providing an output signal to the measuring means, the parallelogram comprising a support element connected to the base, a translation element connected to the transmission device and two parallel arms connected to the translation element and to the support element by joints without play.

2. The apparatus of claim 1, wherein each transmission device comprises a transmission arm with at least four elastic joints, comprising a pair of mutually perpendicular deflection joints near to each end of the transmission arm and optionally a torsion joint.

3. The apparatus of claim 2, wherein the transmission arm is fixed directly to the translation element of the associated parallelogram, or is made in one piece with said translation element, in at least one of the articulated kinematic units.

4. The apparatus of claim 2, wherein the transmission arm makes an angle with the translation element of the associated parallelogram in at least one of the articulated kinematic units and the transmission device further comprises a direction changing device connecting the transmission arm to the translation element and having an articulated direction changing arm located substantially on a bisector of the said angle.

5. The apparatus of claim 2, wherein the parallelogram and the transmission device of an articulated kinematic unit are made of a single piece.

6. The apparatus of claim 1, wherein in said pair of articulated kinematic units, the translation elements of said units parallel to one another comprise respective

abutment devices cooperating with one another to limit differential translation between said translation elements, in order to limit the corresponding rotation of the platform.

7. The apparatus of claim 1, comprising at least one plane articulated structure including a rigid plate fixed to the base and two of the articulated kinematic units, whose axes of translation are substantially perpendicular to one another, said plate forming the support element of each of the two articulated kinematic units.

8. The apparatus of claim 7, comprising at least two of said plane articulated structures, arranged in similar fashion and located in parallel planes, such that their axes of translation are parallel two by two.

9. The apparatus of claim 7, comprising at least two of said plane articulated structures located in perpendicular planes, such that two of their axes of translation are parallel and the other two are mutually perpendicular, the two articulated structures being disposed along two side faces of the apparatus, such that their perpendicular axes of translation intersect in the vicinity of a corner of the apparatus.

10. The apparatus of claim 7, comprising three of said plane articulated structures, of which two are located in parallel planes and of which the third is located in a plane perpendicular to said parallel planes, such that the three structures have an axis of translation parallel to a same principal axis (Y), in particular the vertical axis.

11. The apparatus of claim 1 with six degrees of freedom, comprising six of said articulated kinematic units and wherein the direction of translation of three of the articulated kinematic units is parallel to a first (Y) of the principal axes, that of two other of the articulated kinematic units is parallel to a second (X) of the principal axes and that of the sixth articulated kinematic unit is parallel to the third (Z) of the principal axes.

12. The apparatus of claim 11, wherein the first principal axis (Y) is vertical.

13. The apparatus of claim 11, comprising three plane articulated structures, each including a rigid plate fixed to the base and two of the said articulated kinematic units, whereof the axes of translation are substantially perpendicular to one another, said rigid plate forming the support element of each of the two articulated kinematic units, the respective planes of said articulated structures all being parallel to the first principal axis (Y).

14. The apparatus of claim 1, wherein the translation element of each of the articulated kinematic units is associated with a linear electromagnetic transducer connected to electrical control and/or measuring means, said electromagnetic transducer effecting a transmission of force without contact between the translation element and the support element of the articulated kinematic unit.

15. The apparatus of claim 14, wherein the electromagnetic transducer is located within the articulated parallelogram with which it is associated.

16. An articulated transmission arm, in particular for an apparatus according to claim 1, said transmission arm being formed from a bar provided with elastic joints formed by reduction of the transverse section of the bar, characterized in that it comprises five distinct elastic joints, comprising a pair of deflection joints substantially perpendicular to one another near to each end of the bar and a torsion joint.

17. The transmission arm of to claim 16, wherein the torsion joint comprises at least two flexible lamellae located in respective planes parallel to a desired torsion axis, at least two of these planes not being parallel to one another.

18. The transmission arm of claim 17, wherein the torsion joint comprises two pairs of flexible lamellae spaced from a longitudinal axis of the bar, each pair of lamellae being located in a respective plane which contains said axis.

19. The transmission arm of claim 18, wherein said planes intersect at an angle less than 90 degrees.